

# CASE REPORTS

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## An Anatomical Basis for Unilateral Leg Edema in Adolescent Girls

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EDEMA OF THE LOWER EXTREMITIES, particularly in female patients, has traditionally been associated with lymphatic disease.<sup>1,2</sup> From a survey of the modern medical literature it appeared that iliac vein obstruction in the young has not been recognized as an etiologic factor in the development of relative enlargement of the left lower extremity. Three cases are presented in which relative enlargement of the left leg was the presenting complaint, all in adolescent girls. In each case narrowing or obstruction of the common iliac vein on the left side was documented by a phlebogram as well as by intraoperative findings.

### Reports of Cases

**CASE 1.** A 15-year-old girl was first seen and examined by me in 1966 at the age of 8 years. At that time the parents said that the patient's left leg seemed bigger around than the right, and this was confirmed at physical examination.

The patient was observed to be rather thin. The blood pressure was 110/70 mm of mercury and the pulse rate 72. The circumference of the left leg was greater than the right. Pitting edema was not present. Measurements, in inches, were as follows:

	Circumference	
	Right	Left
Mid-thigh .....	18¾	18¾
Calf .....	12¾	13
Ankle .....	7¾	8

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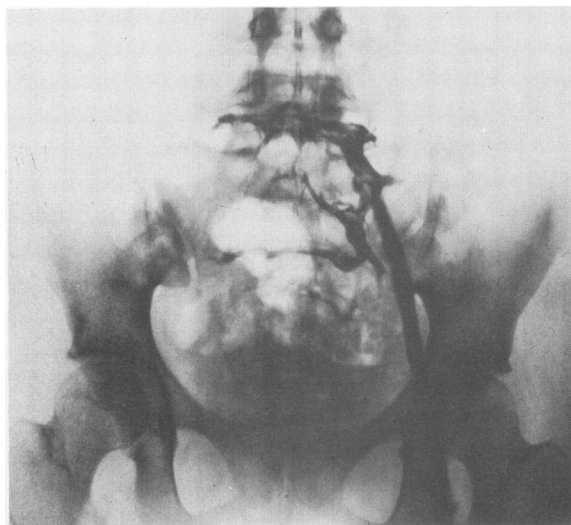


Figure 1.—Left saphenofemoral phlebogram, Case 1.

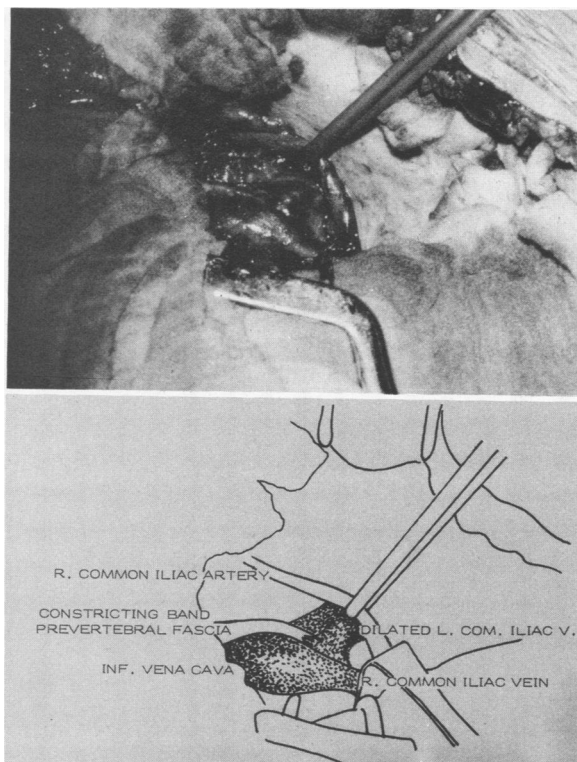
The patient was treated with an elastic stocking and was observed at regular intervals until her growth was complete. Phlebograms were obtained in 1966 and were repeated in 1973 (Figure 1). The findings of both phlebograms were similar—namely, an occlusion of the left common iliac vein at its junction with the vena cava. When the patient had reached full growth, operation was carried out. After the exposure of the retroperitoneum, occlusion of the left common iliac vein by a congenital band at the take-off point of the right common iliac artery was noted. A band from the prevertebral fascia could be identified and was removed (Figure 2). The left iliac vein was approximately four times the size of the right common iliac vein. After removal of the congenital band the veins quickly became equal in size.

The postoperative course was uneventful. Postoperative leg measurements are not available.

**CASE 2.** A 16-year-old girl was examined because of "swelling" of the left leg over a four-year period. There was no history of trauma or inflammation.

On physical examination the blood pressure was 120/70 mm of mercury and the only physical abnormality noted was gross difference in size between the left leg and the right. There was no pitting edema. Measurements, in inches, were:

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**Figure 2.**—Pathologic changes seen at operation in Case 1.

	<i>Circumference</i>	
	<i>Right</i>	<i>Left</i>
Mid-thigh .....	21	21
Calf .....	13½	14¾
Ankle .....	7½	7¾

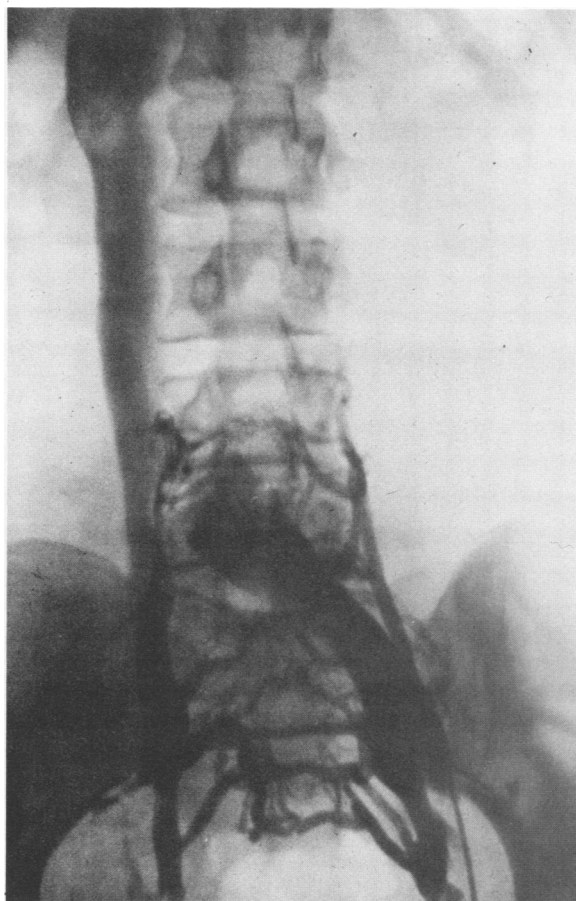
Phlebograms revealed obstruction of the left common iliac vein at its junction with the vena cava, with an abundant collateral flow (Figure 3).

At operation, the retroperitoneum was mobilized. A band was found across the common iliac vein on the left side at its junction with the vena cava. The left iliac vein was three or four times the size of the right. A band from the prevertebral fascia was found and removed. The left iliac vein rapidly diminished in size to that of the right. The postoperative course was uneventful.

Measurements of the lower extremities six months after operation were as follows (in inches):

	<i>Circumference</i>	
	<i>Right</i>	<i>Left</i>
Mid-thigh .....	19	19
Calf .....	12½	13¾
Ankle .....	8	7½

Later the legs became equal in size.



**Figure 3.**—Left saphenofemoral phlebogram, Case 2.

**CASE 3.** A 19-year-old girl was examined because of swelling of the left leg. At age 16 she had had an episode of phlebitis involving the calf of the left leg, and anticoagulant therapy had been given.

On physical examination in the present instance the blood pressure was 110/70 mm of mercury. There was some obvious disparity in the size of the legs. The measurements, in inches, were:

	<i>Circumference</i>	
	<i>Right</i>	<i>Left</i>
Mid-thigh .....	18	18½
Calf .....	13	13
Ankle .....	8¼	8¾

A phlebogram showed a point of occlusion and then a space in which the left common iliac system was not visualized, with an abundant collateral circulation (Figure 4).

At operation, after exploration of the retroperitoneum, a point of compression of the common iliac vein on the left was observed, and a fibrous band from the prevertebral fascia was found and removed. The common iliac vein was opened, and

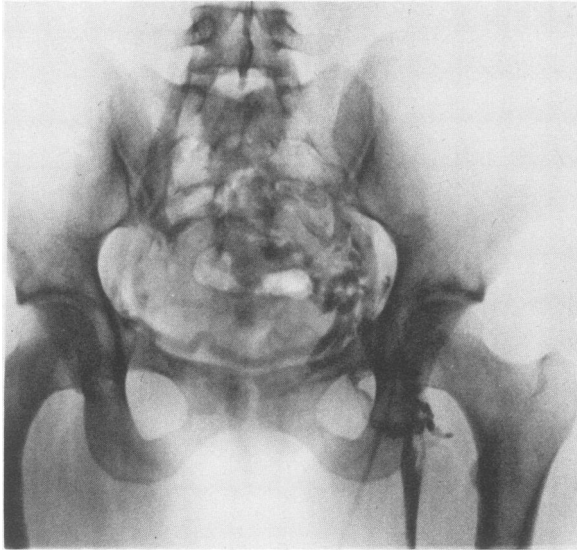


Figure 4.—Left saphenofemoral phlebogram, Case 3.

it was found that there was no communication between it and the vena cava due to agglutination of the anterior and posterior walls at the junction of the two vessels. The iliac system was patent in small segments down to the inguinal ligament. The common femoral vein was patent, and there was abundant collateral circulation through the ovarian vein and pelvis. Because of the unusual length of the involved segment, reconstruction of the iliac system was not possible.

### Discussion

The features observed on phlebograms were similar in all three cases; and in each of them an anatomical variant, a band occluding the left common iliac vein at its junction with the vena cava, was observed at surgical exposure. It would appear that the first two cases may have represented earlier phases of a more complex syndrome seen in the third case. In the first two cases the increased venous pressure and relative stasis of the venous system in the left leg were readily treated by removing the congenital band and mobilizing the aorta and the right common iliac artery. As to the third case, one must wonder whether the left common iliac system was ever patent. With the absence

of any inflammatory reaction or findings compatible with phlebitis of the iliac system on the left side, it appears that a reasonable speculation would be that the congenital band obstructing the left common iliac vein eventually was responsible for nonfunction of the iliac system on that side.

In all of these cases there was only modest enlargement of the left leg, which is consistent with the knowledge that venous occlusion produces far less edema than lymphatic occlusion. The massive edema associated with the postphlebotic syndrome is considered to be caused by secondary lymphangitis.

No previous report of the gross pathologic changes observed in these three cases could be found in the literature. Since it is improbable that these were simply isolated instances in a relatively small community, it is possible that the condition is more widespread but not recognized. Whether or not it is significant that all the patients were young women can only be conjectured.

Any stasis in the venous system would preclude the development of phlebitis. More pertinent, interruption of common iliac venous flow may be conducive to iliofemoral venous thrombosis.

Diagnosis of the condition can be made readily by phlebography, as is particularly illustrated in Figure 3, which plainly shows the band or the occlusion of the left common iliac vein. Since phlebography can be done with relatively little risk, it may be considered a primary diagnostic procedure in patients with obscure minor disparities in leg size.

### Summary

Obstruction of the left common iliac vein due to a congenital band formed by the prevertebral fascia was observed in three cases. Diagnostic features, pathological changes and surgical treatment are discussed, as well as possible implication of the development of thrombophlebitis.

### REFERENCES

1. Allen EV, Barker NW, Hines EA Jr: *Peripheral Vascular Disease*. Philadelphia, W. B. Saunders Company, 1958
2. Haller JA Jr: *Deep Thrombophlebitis*. Philadelphia, W. B. Saunders Company, 1974